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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/495,899	02/02/2000	Hiroyuki Suzuki	032817-002	5436

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EXAMINER	
NGUYEN, MADELEINE ANH VINH	
ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 07/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/495,899	SUZUKI ET AL.	
	Examiner	Art Unit	
	Madeleine AV Nguyen	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 7-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _____ is/are rejected.

7)☒ Claim(s) *2-5,10,14 and 16-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *01/09/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on January 09, 2006 has been entered.

2. The indicated allowability of claims 1-5, 7-21 is withdrawn in view of the newly discovered reference(s) to Kawai et al (US Patent No. 6,449,060), Koichi (Japanese publication number 09-298665) and Hiratsuka et al (US Patent No. 4,980,760). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai et al (US Patent No. 6,449,060) in view of Koichi (Japanese Publication Number 09-298665).

Concerning claim 1, Kawai discloses an image processing apparatus (Figs. 1 and15) comprising a first sensor having a plurality of reading elements arranged in a primary scanning direction (210-1(R) or 210-2(G) or 210-3(B)); a second sensor having a plurality of reading elements arranged in the primary scanning direction, the second sensor being disposed a predetermined number of lines apart from the first sensor in a secondary scanning direction (210-1(R) or 210-2(G) or 210-3(B); col. 6, lines 15-37); an integral correction portion for correcting a data output time difference due to a position difference between the first and second sensors by an amount corresponding to an integral number of line units (col.7, line 338 – col. 8, line 55); and a fractional correction portion for correcting the data output time difference due to the position difference between the first and the second sensors by an amount corresponding to less than one line unit; a black fine line detection portion for detecting a black fine line included in image data, wherein the fractional correction portion is enabled or disabled based on a result of a process of comparing with a predetermined value M (col. 17, lines 45–67; col. 18, line 58 – col. 20, line 42; col. 20, line 66 – col. 22, line 23; col. 22, line 61 – col. 23, line 63).

Kawai fails to teach that the fractional correction portion is enabled or disabled based on a width of the black fine line. Koichi discloses an image processor provided with a read error correction consisting of a thin line area detection (21), a line width detection (22), a thin line density conversion (23) which decides the correction amount depending on the line width of the thin line area and corrects and outputs the image signals R, G, B as they are. Koichi further teaches that the line width detection portion 22 is a circuit (Fig.5) for detecting a line width and delivers the detection result to the fine line density conversion portion 23. In Fig.5, the line width counting circuit 223 counts the number of values of "1" in each of the vertical and

horizontal directions to output the minimum value of both the counts as a line width (0027). It would have been obvious to one skilled in the art at the time the invention was made to consider the teaching of detecting a line width in Koichi equivalent to the counting of the number of black pixels in the fourth and fifth embodiments in Kawai since both Kawai and Koichi also teach the fractional correction due to the position difference or pixel shift.

5. Claims 7-9, 11-12, 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai et al (US Patent No. 6,449,060)

Concerning claim 7, Kawai discloses an image processing apparatus comprising a sensor disposed linearly in a primary scanning direction ,the sensor reading an image that has been decomposed into plural colors (RGB); an optical system for projecting light from the image onto the sensor (Fig.15); and a correction portion for correcting a mis-registration of the colors in the primary scanning direction wherein the correction portion performing a mis-registration correction for each of plural areas divided in the primary scanning direction.

Kawai does not directly teach that the color mis-registration is due to a chromatic aberration. However, in the Background of the Invention, Kawai teaches that color mis-registration is caused by chromatic aberrations of lenses (col. 3, lines 40-44). It would have been obvious to one skilled in the art at the time the invention was made to consider the correction for correcting a color mis-registration in Kawai is due to a chromatic aberration of the optical system since it is a matter of well-known in the art.

Concerning claims 8-9, Kawai further teaches that the sensor includes line sensors for red, green and blue color arranged by a predetermined pitch in a secondary scanning direction

(col. 6, line 19-26); a predetermined test image (pre-scan image) is read according to a characteristic of a machine coupled to the image processing apparatus and wherein information for the correction for each area is obtained from the read image data (col. 18, lines 32-35).

Concerning claims 11-12, Kawai discloses an image processing apparatus as discussed in claim 7 above and further comprising a plurality of interline correction portions, wherein each of the interline correction portions uses a different reference color (chromatic or achromatic) for correcting a mis-registration among the element arrays of the image sensor in the secondary scanning direction, and a correction output portion for outputting image data corrected in accordance with image data output by the plural interline correction portions

Kawai fails to directly teach that each of the interline correction portions produces plural sets of image data. However, in Fig.38, Kawai teaches that an achromatic color/chromatic color determination section 1109 divides the color space of Ca and Cb into an area clearly indicating an achromatic color, an area clearly indicating a chromatic color and a middle area (col. 32, lines 27-31) for color correction. It would have been obvious to one skilled in the art at the time the invention was made to consider that each of the interline color correction in Kawai produces plural sets of image data since Kawai further teach the output image data is from plural sets of image data.

Concerning claim 20, 21, Kawai further teaches that each interline correction portions produces image data of each color.

6. Claim 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiratsuka et al (US Patent No. 4,980,760).

Concerning claim 13, Hiratsuka et al discloses a color image processing apparatus (Fig.1) comprising a fine line decision portion (16) for deciding whether the present pixel is on a fine line (black thin line or black edge line) or not for plural image data having different wavelength components read by an image reading device; a density correction portion (18) for performing correction by increasing density of image data of at least one color component among image data of plural color components that constitute a present pixel when the present pixels is on a fine line so as to reduce a difference between densities of image data of the plural wavelength components that constitute the present pixel; and a chroma decision portion (20) for deciding whether the present pixel has a chromatic color or an achromatic color using an output value of the density correction portion (Abstract; col. 3, line 13 – col. 4, line 43; col. 7, line 39 – col. 8, line 18; col. 8, line 52 – col. 10, line 62; col. 11, lines 8-15; col. 12, lines 26-32).

It is noted that Hiratsuka et al does not directly teach a plurality of wavelength component among image data. However, Hiratsuka teaches that each color has different wavelength range or level (col. 10, lines 37-41). For example, a wavelength range is divided into green and blue and red wavelength ranges. Hiratsuka further teaches regarding differences in levels of red, green and blue outputs, "The level difference must be taken into consideration at the time of CCD mounting. When a black line is imaged, and red, green and blue output signals are quantized by 8-bit A/D converters, level differences between the red, green and blue output signals preferably fall within the range of 4 or less." (col. 10, line 45-57), and "When the recording color is K, a density level is added (e.g., +16). This addition is performed to prevent thinning of the black line which is caused by chromatic color ghost elimination." (col. 12, lines 29-32). It would have been obvious to one skilled in the art at the time the invention was made

to consider the density correction portion (18) in Hiratsuka performs correction by increasing a density of image data of at least one wavelength component (e.g., black component) when the present pixel is on a fine line since Hiratsuka teaches that each color has its wavelength component different from others.

Concerning claim 15, Hiratsuka further teaches a print image data generation portion (27) for generating image data for printing using the output value of the density correction portion (Fig2).

Allowable Subject Matter

7. Claims 2-5, 10, 14, 16-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is an Examiner's Statement of Reasons for Allowance:

a. Claims 2-5 are allowable over the prior art of record because the Examiner found neither prior art cited in its entirety, nor based on the prior art, found any motivation to combine any of the said prior art which teaches an image processing apparatus as claimed in claim 1 and further comprising a control portion for enabling the fractional correction portion when a fraction is generated adding to integral lines of output time difference between the data from the first sensor and the data from the second sensor after changing a scaling ration or an original image, wherein the change in the scaling ratio causes a change in the relative speed of the original image to the first and second sensors.

b. Claim 10 is allowable over the prior art of record because the Examiner found neither prior art cited in its entirety, nor based on the prior art, found any motivation to combine any of the said prior art which teaches an image processing apparatus as claimed in claim 9 wherein correction coefficients for the areas are obtained as information for correction for each area in accordance with a distribution of the position shift among the barycenters of the red, green and blue image data in the primary scanning direction.

c. Claims 14, 16-19 are allowable over the prior art of record because the Examiner found neither prior art cited in its entirety, nor based on the prior art, found any motivation to combine any of the said prior art which teaches an image processing apparatus as claimed in claim 13 wherein the fine line decision portion detects one or two dot width fine lines with a high density; and wherein the density correction portion performs correction by increasing a density of image data of wavelength components except for a wavelength component having best modulation transfer function (MTF) characteristics; wherein the density correction portion performs correction by increasing a density of image data of a first wavelength component and the interline correction portion performs correction by processing image data of the first wavelength component by an interpolation process; and first density correction quantity is apply when the present pixel is on a fine line for each of image data of all wavelength components and a second density correction quantity is applied when the present pixel is on a fine line only for a part of the wavelength components, wherein the second density correction quantity is set to a value less than the first density correction quantity.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Shiraishi et al (US Patent No. 6,452,709) discloses an image forming apparatus which can provide a color image free from any color mis-registration with low cost.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Madeleine AV Nguyen whose telephone number is 571 272-7466. The examiner can normally be reached on Tuesday-Thursday 12:30-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward L. Coles can be reached on 571 272-7402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Madeleine AV Nguyen
Primary Examiner
Art Unit 2625

June 26, 2006